

WHAT IS CLAIMED IS:

1. A method for forming MOSFETs, comprising:
providing a substrate having a source region, a gate region, and a drain region;
5 forming a silicon-germanium layer in each of the source and drain regions;
forming, in the substrate, a source in the source region and a drain in the drain region;
forming a silicon layer outwardly from the silicon-germanium layer in
10 each of the source and drain regions; and
forming a silicide layer in each of the source and drain regions.
2. The method of Claim 1, wherein forming the silicide layer comprises:
depositing a reactive metal outwardly from the silicon layer in each of
15 the source and drain regions;
reacting the reactive metal with at least the silicon layer; and
selectively removing non-reacted reactive metal from the substrate.
3. The method of Claim 2, wherein the reactive metal is selected from the
20 group consisting of titanium, cobalt, nickel, and tungsten.
4. The method of Claim 1, wherein forming the silicide layer comprises:
depositing a reactive metal outwardly from the silicon layer in each of
the source and drain regions;
25 reacting the reactive metal with the silicon layer and a portion of the silicon-germanium layer; and
selectively removing non-reacted reactive metal from the substrate.
5. The method of Claim 4, wherein the reactive metal is selected from the
30 group consisting of titanium, cobalt, nickel, and tungsten.

6. The method of Claim 1, wherein forming the silicon-germanium layer in each of the source and drain regions comprises forming, in the substrate, the silicon-germanium layer in each of the source and drain regions.

5 7. The method of Claim 1, wherein forming the silicon-germanium layer in each of the source and drain regions comprises forming, outwardly from the substrate, the silicon-germanium layer in each of the source and drain regions.

8. The method of Claim 1, wherein the silicon layer has a thickness
10 between approximately 25 Å and 150 Å.

9. The method of Claim 1, wherein the silicon layer has a thickness of approximately 75 Å.

15 10. The method of Claim 1, wherein the silicon-germanium layer has a thickness between approximately 200 Å and 300 Å.

11. The method of Claim 1, wherein the silicon-germanium layer is an epitaxial layer.

12. A method for forming MOSFETs, comprising:
providing a substrate having a source region, a gate region, and a drain region;
forming, in the substrate, an epitaxial silicon-germanium layer in each
5 of the source and drain regions;
forming, in the substrate, a source in the source region and a drain in the drain region;
forming a silicon layer outwardly from the silicon-germanium layer in each of the source and drain regions, the silicon layer having a thickness
10 between approximately 25 Å and 150 Å;
depositing a reactive metal outwardly from the silicon layer in each of the source and drain regions;
reacting the reactive metal with at least a portion of the silicon layer;
and
15 selectively removing non-reacted reactive metal from the substrate to form a silicide layer in each of the source and drain regions.
13. The method of Claim 12, wherein the reactive metal is selected from the group consisting of titanium, cobalt, nickel, and tungsten.
20
14. The method of Claim 12, wherein reacting the reactive metal with at least a portion of the silicon layer comprises reacting the reactive metal with the whole silicon layer and a portion of the silicon-germanium layer.
- 25 15. The method of Claim 12, wherein the silicon layer has a thickness of approximately 75 Å.
16. The method of Claim 12, wherein the silicon-germanium layer has a thickness between approximately 200 Å and 300 Å.

17. A system for forming MOSFETs, comprising:
a substrate having a source region, a gate region, and a drain region;
an epitaxial silicon-germanium layer formed in each of the source and
drain regions;
5 a source formed in the source region;
a drain formed in the drain region;
a silicon layer disposed outwardly from the silicon-germanium layer in
each of the source and drain regions; and
a reactive metal layer formed in each of the source and drain regions.
- 10
18. The system of Claim 18, wherein the silicon-germanium layer in each
of the source and drain regions is formed within the substrate.
19. The system of Claim 18, wherein the silicon-germanium layer in each
15 of the source and drain regions is formed outwardly from the substrate.
20. The system of Claim 18, wherein the silicon layer has a thickness
between approximately 25 Å and 150 Å.